Remarks

This paper is responsive to the non-final office action of April 29th, 2010. All rejections and objections of the Examiner are traversed. Reconsideration of pending claims is respectfully requested.

Specification

Regarding section 4 of the action, the Applicant cancels the new matter in the Applicant's response to the Examiner-initiated Interview Summary and the Notice of Non-Compliant Amendment of June 19th, 2009, as suggested by the Examiner. The Applicant's response is dated August 5th, 2009.

Paragraphs [0010], [0011], [0021], [0025], [0061], [0067], [0068], [0087], [0094], [0097], [0151] and [0168] have been amended to *correct only typographical errors.*

The amendments filed to the specification in this paper are in reference to the original specification dated 24 September 2003. A copy of the original specification of 24 September 2003 is enclosed in Appendix C which begins on page 54 of this paper.

Claims

Claims 1-19, 21-26, and 31-38 are pending in this application.

Dependent claims 21-26 have been amended to add an existing key feature of the present invention.

Claims 31-38 have been amended to improve clarity.

Claims 20 and 27-30 and 39 were previously canceled.

A clean copy of the claims dated 15 January 2010 is enclosed in Appendix B which begins on page 45 of this paper.

MPEP Chapter 2100, §2163.07 I and II state that "Amendments to an application (including specification and claims) which are supported in the original description are NOT new matter". Rephrasing (§2163.07 I) and correcting typographical errors (§2163.07 II) are not

new matter. *Consequently, there are no new matter added to the amended specification and claims in this paper.*

The substitute specification and amended claims in this paper conforms to 37 CFR 1.121, 1.125 (b) and (c), and MPEP § 714.

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The rejection under 35 USC §101

Regarding section 6 of the action, Claims 31-38 have been rejected under 35 U.S.C. 101 because the Examiner asserts that the claimed invention is directed to non-statutory subject
10   matter.

Applicant Arguments with regard to the rejection under 35 USC §101

Claims 31-38 have been amended to improve clarity and overcome the Examiner's rejection.
15   The subject matter of independent claim 31 as amended discloses a method for a computer program product comprising a computer-readable medium having stored thereon instructions for causing a computer to perform a process for assessing business solutions comprising two levels of networks: (1) a network architecture that carries the telecommunications services (e.g., voice, data, etc.) and delivers the services to the end users;
20   and (2) a management network for managing the network architecture wherein the management network comprises management processes and sub-processes for network, service, and customer management. The network, service, and customer management processes and sub-processes are configured, provisioned, and engineered based on a Service Provider operating environment, (paragraphs [0060] to [0069], [0101] to [0138] and [0144] to [0151]; and Figure 1, Figures 8 to
25   14 and Figure 17 of the present application).

The method comprises the steps of receiving data and options for plurality of network architectures, network management processes, and service and customer management processes.

The method comprises the steps of engineering the plurality of network architectures; and determining suppliers' equipment costs for the plurality of network architectures.
30   The method comprises the steps of engineering the network management processes and the service and customer management processes for managing the plurality of network

architectures; and determining suppliers' management processes costs for the network management processes and the service and customer management processes. The network, service, and customer management processes and their associated sub-processes are detailed in paragraphs [0101] to [0138] and shown in Figures 8 to 14 of the present application.

The method further comprises the steps of determining, based on the costs of the plurality of network architectures and the network management processes and the service and customer management processes, business parameters for the business solutions; validating and calibrating the data and options and the costs for the plurality of network architectures and the network management processes and the service and customer management processes; and storing and displaying the business parameters for the business solutions for the telecommunications network (paragraphs [0144] to [0151] and Figure 17 of the present application).

A claimed computer program product comprising a computer-readable medium having stored thereon instructions for causing a computer to perform a process for assessing business solutions for a telecommunications network, **is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized**, and is thus statutory subject matter under 35 U.S.C. § 101. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035 – MPEP 2106.01.

The method of claim 31 is tied to the claimed computer program product of independent claim 1 and is thus a statutory subject matter under 35 U.S.C. 101.

Claims 32-38 are all directly or ultimately dependent from independent claim 31 and are statutory subject matter under 35 U.S.C. § 101.

The rejection under 35 USC §103

Claims 1-19, 21-26, and 31-38 have been rejected under 35 U.S.C. 103 (a) as being unpatentable over:

Ngi et al., U.S. Patent Application Publication Number 2003/0158765 A1 (hereinafter referred to as **Ngi**); in view of

EURESCOM Project P901-PF Extended investment analysis of telecommunication operator strategies (hereinafter referred to as **EURESCOM**):

Deliverable 1: Investment analysis framework definition and requirements specification (hereinafter referred to as D1), and

Deliverable 2: Investment Analysis Modeling (hereinafter referred to as D2), and hereinafter referred to as

EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2); and further in view of Arbel et al., U.S. Patent Application Publication Number 2004/0008673 A1 ((hereinafter referred to as **Arbel**); or further in view of

Mobile LRIC model specification ((hereinafter referred to as **Mobile**).

(*That is*, Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile.)

Please note that limitations (c), (d), (e), and (f) of independent claim 1 correspond to limitations (u), (v), (w), and (y) of independent claim 31, respectively. Therefore, the remarks/arguments in this paper are applicable to both limitations (c), (d), (e), and (f) of independent claim 1 and limitations (u), (v), (w), and (y) of independent claim 31. The limitations (c), (d), (e), and (f) are used in the following discussion.

Applicant arguments regarding the claims rejection under 35 USC 103

The combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile references **does not** disclose the claimed invention which is claimed in claims 1-19, 21-26, and 31-38 of the present application as will be described below.

The claimed invention discloses a computer program product comprising a computer-readable medium having stored thereon instructions for causing a computer to perform a process for assessing business solutions comprising *two levels of networks:* (1) a network architecture that carries the telecommunications services (e.g., voice, data, etc.) and delivers the services to the end users; and (2) a management network for managing the network architecture wherein the management network comprises management processes and sub-processes for network, service, and customer management. The network, service, and customer management processes and sub-

processes are *modeled and engineered* based on the Service Provider operating environment as detailed in paragraphs [0060] to [0069] and [0101] to [0138]; and Figure 1 and Figures 8 to 14 of the present application.

The computer-readable medium encoded with the computer program product contains instructions for causing the computer to receive data and options for plurality of network architectures, network management processes, and service and customer management processes for business solutions for a telecommunications network; engineer (and determine the costs of) the plurality of network architectures, network management processes, and service and customer management processes; determine business parameters for the business solutions; and store and display the business parameters for the business solutions for the telecommunications network.

The options comprise technology alternatives for the network architectures and choices for the network, service, and customer management processes for managing the network architectures for the business solutions.

Accordingly, the management processes for a mesh network architecture (e.g., Figure 3 of the present application) or ring network architecture (e.g., Figure 4 of the present application) are selected and defined, based on the received data and options, for the network architectures. These management processes are *engineered* for managing the mesh or ring network architecture; and the costs are determined for the engineered management processes. The management processes comprise network management processes and service and customer management processes and their associated sub-processes that replicate today's operations and management networks for Service Providers.

The *engineering* of the network management processes and the service and customer management processes *purport* the manufacturing and production of the management networks or the operations environment for a Service Provider. In another words, the engineering of the network management processes and the service and customer management processes imply replicating the management networks or the operations environment for the Service Provider.

Limitations (d) and (e) of independent claim 1, which recite:" *engineering* the network management processes and the service and customer management processes, based on the received data and options; and "determining suppliers' management processes costs for the network management processes and the service and customer management processes",respectively, are *key features* of the present invention.

The focus of the office action dated 04/29/2010 (as well as previous office actions) is on cost categories cited in Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), Arbel, and Mobile references. None of these references disclose concepts, methodologies, modeling, or engineering of the management networks (that is, the operations environment which includes the network management processes and the service and customer management processes) for the Service Providers. The cited prior art references take for granted that the management networks center or the management functions of the operations environment for the Service Provider is already exists. The cited prior art references determine the cost of selected attributes in existing legacy management functions and then, add the management cost of these selected attributes to the network architecture cost. The cost of an element or a network is a measured value which is used in a comparative analysis and *does not* provide a management network structure or configuration for the operations environment for the Service Provider.

On page 9 of the action, the Examiner states that "Ngi does not disclose wherein the instructions (d) comprise instructions for causing the computer to engineer the network management processes and the service and customer management processes for managing the network architecture for the business solution. However, EURESCOM teaches the network management processes and the service and customer management processes for managing the network architecture for the business solution".

On page 16 of the action, the Examiner states that "Ngi does not disclose wherein the instructions for engineering the network management processes comprise instructions for causing the computer to engineer at least...... However, EURESCOM teaches network provisioning as a management process (D2, Volume 1: page 11, Table 1; page 12, Table 12).

Further, on page 17 of the action, the Examiner states that "Ngi does not disclose wherein the instructions for engineering the service and customer management processes comprise instructions for causing the computer to engineer at least...... However, EURESCOM teaches identifying customer care management running costs (D2, Volume 1: page 11, Table 1).

According to the English DICTIONARY, engineering a process is not the same as teaching a process. The Examiner clearly states that Ngi does not disclose the engineering (that is, manufacturing, production) of the management processes, however, when it comes to EURESCOM, the Examiner states that EURESCOM teaches (that is, educates, lectures) management processes.

The Examiner clearly differentiates between Ngi who <u>does not engineer</u>…. And EURESCOM who <u>teaches</u> …... which leads to the conclusion that <u>EURESCOM also does not disclose the engineering of the management processes</u>. Engineering a management process is not the same as teaching a management process.

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In the present application, *engineering two levels of networks purport the engineering of:* (1) a network architecture that carries the telecommunications services (e.g., voice, data, etc.) and delivers the services to the end users; and (2) a management network for managing the network architecture wherein the management network comprises management processes and sub-processes for network, service, and customer management. The *engineering of two levels of networks would result in:*

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<u>Firstly</u>, a network architecture which comprises multiple network elements (such as switches, routers, add/drop multiplexes, etc.) and links connecting these network elements to each other using network planning and engineering principles, as stated in paragraph [0145] of the present application. Examples of network architectures are shown in Figures 3 and 4 and others are described in paragraphs [0158] to [0163] of the present application; and

15

<u>Secondly</u>, a management network for managing the network architecture of (1) above, which comprises processes and sub-processes and their tasks for network, service, and customer management.

Engineering the management processes is clearly stated in the present application, as shown in module 130 of Figure 1. The engineering is done based on options 220 and data module 270 of Figure 2. The method step (block 1735) of Figure 17 shows the engineering of the management processes. Accordingly, the engineering of the management processes is a *key feature* of the computer program product and method presented in the claimed invention.

20

The sub-processes for each management process in Figure 2 are further configured in Figures 8 to 14. Each sub-process is provisioned by multiple of tasks as detailed in paragraphs [0101] to [0132] of the present application.

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Accordingly, the engineering of the management processes would result in multiple network, service and customer management processes (or as referred to in the industry, operations support systems (OSS) for network, service and customer management (paragraph [0106] of the present application) for managing the network architecture.

30

Engineering the management processes implying configuring the OSS by identifying the processes and sub-processes within the OSS for performing specific functionality such as CRM, WOM, NIM, SAP, FM, PM, etc. as well as provisioning these processes by determining the tasks within each process and sub-process as described in paragraphs [0101] to [0132] of the present application.

The engineering of the management processes and sub-processes which form the OSS for network, service, and customer management is a key feature of the present invention. Figure 18 illustrates the contribution of the network, service and customer management processes (or network, service, and customer OSS) to the network architecture cost.

Network management options (module 222 of Figure 2) and service and customer management options (module 223 of Figure 2) configure (that is, construct, build up, shape or form) the processes within each OSS and the tasks described in paragraphs [0101] to [0132] provision (that is, define the specification) of the process.

In summary, none of the cited prior art references or the combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile references teach limitation (d) of independent claim 1, which recites: "*engineering* the network management processes and the service and customer management processes..."

Since none of the cited prior art references teach limitation (d), hence, these cited prior art references do not determine their costs. Accordingly, the combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile references does not teach limitation (e) of independent claim 1, which recites: "determining suppliers' management processes costs for the network management processes and the service and customer management processes", as detailed in paragraphs [0060] to [0069] and [0101] to [0138]; and Figure 1 and Figures 8 to 14 of the present application.

Furthermore, the Applicant searches the cited prior art references using key words such as "validate", "calibrate", and the search result in each reference is "0" or "not found".

A careful reading of the Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), Arbel, and Mobile references will confirm that there is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and

calibrating data, options, and costs for any element in the network architecture or otherwise. Hence, the combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel, or Mobile references does not teach limitation (f) of independent claim 1, which recites: "validating and calibrating the data and options and the costs for the plurality of network

5 architectures, the network management processes, and the service and customer management processes".

To sum up, limitations (d), (e) and (f) of independent claim 1, which recite:" *engineering* the network management processes and the service and customer management

10 processes, based on the data and options of (a), for managing said plurality of network architectures; "*determining* suppliers' management processes costs for the network management processes and the service and customer management processes", and "*validating and calibrating* the data and options and the costs for the plurality of network architectures, the network management processes, and the service and customer management processes", respectively, are

15 *key features* of the present invention.

None of the cited prior art references separately or in combination teach or suggest the limitations (d), (e), and (f) of independent claim 1 of the claimed invention. Moreover, none of the cited prior art references expressly or implicitly suggest the limitations (d), (e), and (f) of independent claim 1. The combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1

20 and Volume 2), and Arbel, or Mobile references **does not** produce the claimed invention, as claimed in claims 1-19, 21-26, and 31-38 of the present application.

Application No.:   10/668,133
Art Unit: 3689
Amendment dated: July 14th, 2010

Elements of the claimed invention and the cited prior art are tabulated below.

Elements recited	The claimed Invention (10/668,133)	Ngi	Combination of Ngi and EURESCON (D1 and D2)	Combination of Ngi, EURESCON (D1 and D2) and Arbel	Combination of Ngi, EURESCON (D1 and D2) and Mobile
A computer program product comprising (claim 1) / A method of a computer program product comprising (claim 31)	Yes	Yes	Yes	Yes	Yes
a computer-readable medium having stored thereon instructions for causing a computer to perform a process for assessing business solutions (Claims 1, 31)	Yes	Yes	Yes	Yes	Yes
business solutions comprising alternative network architectures and management processes for a telecommunications network (claims 1, 31)	Yes	No	No	No	No
the computer program product comprising instructions for: (claims 1, 31)	Yes	Yes	Yes	Yes	Yes
(a) receiving data ; receive traffic data, customer data, and financial and labor data (claims 1, 2, 31, 33)	Yes	No	Yes	Yes	Yes
(a) receiving options for plurality of network architectures (Claims 1, 3, 31, 33)	Yes	Yes	Yes	Yes	Yes
(a) receiving data and options for network management processes (claims 1, 2, 3, 31, 33)	Yes	No	No	No	No
(a) receiving data and options for service and customer management processes(claims 1, 2, 3, 31, 33)	Yes	No	No	No	No
(b) engineering the plurality of network architectures ; (Claims 1, 5, 31, 35)	Yes	Yes	Yes	Yes	Yes
(c) determining suppliers' equipment costs for said plurality of network architectures; a network architecture cost and a leasing cost for the network architecture for the business solution; ..footprint per NE cost... (claims 1, 8, 10-14, 31, 34)	Yes	No	No	Yes	No
(d) engineering the network management processes and the service and customer management processes, based on the data and options of (a), for managing said plurality of network architectures; (Claims 1-3, 6, 16, 18, 21-26, 31, 33, 36)	Yes	No	No	No	No
(e) determining suppliers' management processes costs for the network management processes and the service and customer management processes; (claims 1, 3, 15, 17, 19, 21-26, 31, 33, 37)	Yes	No	No	No	No

(f) validating and calibrating the data and options and the costs for the plurality of network architectures, the network management processes, and the service and customer management processes; (Claims 1, 9, 31)	Yes	No	No	No	No
(g) determining, based on the costs of the plurality of network architectures and the network management processes and the service and customer management processes, business parameters for the business solutions; over a pre-determined study period (claims 1, 4, 31, 32)	Yes	No	Yes	Yes	Yes
(h) storing and displaying the business parameters for the business solutions for the telecommunications network (claims 1, 7, 31, 38).	Yes	Yes	Yes	Yes	Yes

Claims 1 and 31:

As previously discussed, the combined teachings of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile *does not* teach business solutions comprising alternative network architectures and management processes for managing the alternative network architectures for a telecommunications network. The combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile does not teach " receiving data and options for engineering the network management processes and service and customer management processes" (limitations (a) and (d) of independent claim 1 (and limitations (n) and (v) of independent claim 31)) and, in turn, does not engineer the network management processes or the service and customer management processes for managing the alternative network architectures.

Engineering the network management processes and the service and customer management processes purport manufacturing and production of the management networks or the operations environment for a Service Provider. Further, since the combined teaching of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile does not engineer the management processes, hence, it does not determine the cost of the management networks for the operations environment for the Service provider (limitation (e) of independent claim 1 (and limitation (w) of independent claim 31)).

Moreover, none of the cited prior art references discloses the "validation and calibration of the data, options, and the costs of the network, service and customer management processes

for managing the alternative network architectures" (limitation (f) of independent claim 1 (and limitation (y) of independent claim 31)).

Accordingly, the combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile does not teach limitations (d), (e), and (f) of independent claim 1 (and limitations (v), (w), and (y) of independent claim 31) of the present invention.

To establish a *prima facie* case of obviousness of a claimed invention, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure – *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) – MPEP §706.02(j).

In view of the utter failure of Ngi to describe the numerous elements in independent claims 1 and 31 discussed above (and stated in the above table), and the failure of EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), Arbel, and Mobile references to cure the deficiencies in the Ngi reference, the subject matter of independent claims 1 and 31 cannot be obvious.

Claims 2-19, 21-26, and 32-38:

Claims 2-19 and 21-26 are all directly or ultimately dependent from independent claim 1; and

Claims 32-38 are all directly or ultimately dependent from independent claim 31.

"If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" – *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir 1988) – MPEP 2143.03.

Since independent claims 1 and 31 are nonobvious over Ngi in view of EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and further in view of either Arbel or Mobile for the reasons set forth above (and stated in the previous table), dependent claims 2-19, 21-26, and 32-38 are likewise nonobvious.

Conclusion

A careful analysis of the elements of the claimed invention and the cited prior art (as shown in the previous table) show that the combination of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile references does not teach limitations (d), (e), and (f) of independent claim 1 (and limitations (v), (w), and (y) of independent claim 31) of the claimed invention.

The combined teachings of Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and Arbel or Mobile references **do not** show or suggest every limitation in the claimed invention. Hence, all rejections and objections of the Examiner are traversed.

Claims 1-19, 21-26, and 31-38 are pending in this application.

Dependent claims 21-26 have been amended to add an existing key feature of the present invention.

Claims 31-38 have been amended to improve clarity.

Claims 20 and 27-30 and 39 were previously canceled.

Reconsideration of all pending claims is respectfully requested.

In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, early favorable reconsideration of this application is respectfully requested.

Respectfully submitted,
/Omayma E. Moharram/

_____

Omayma E. Moharram

Please note that additional arguments regarding the claims rejection under 35 USC 103 for each ground of rejection in the office action dated 04/29/2010 is enclosed in Appendix A which begins on page 30 of this paper.

Appendix A

Applicant arguments regarding the claims rejection under 35 USC 103 for each ground of rejection in the office action dated 04/29/2010

5   ## Claims 1-10, 31-36 and 38:

Regarding section 8 of the action, claims 1-10, 31-36 and 38 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Ngi in view of EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2).

10   The combined teachings of Ngi and EURESCOM (D1 Volume 2 and D2 Volume 1 and Volume 2) references **do not** produce the limitations in claims 1-10, 31-36 and 38 of the claimed invention as will be described below.

The Ngi reference

15   Ngi teaches an end-to-end *network analysis tool* that allows a network consultant to integrate link budget planning calculations with the network planning and business modeling phases of customer proposal generation. This integration provides for significantly reduced calculation times, more accurate business proposals, and the ability *to model many different network scenarios*. The benefits, savings, reduction in operational and capital costs and all the
20   other elements of network savings relating to business parameters that are discovered may be summarized qualitatively and quantitatively in reports that may be presented to a customer company's senior management, in detailed or summary formats. This allows a network consultant to assist customers in migrating to a more profitable, efficient, effective, and end-user driven network, while providing a customer with proof in the strength of their proposed solution
25   and ability to deliver a low cost solution that maximizes the customer's return on investment, (Abstract, Ngi).

The EURESCOM reference

The EURESCOM project P901 main contribution is the *specification of recommended*
30   *methodologies and models to be used in investment analysis of telecommunication operator strategies*. The specification is based on a survey and assessment of relevant approaches and

methodologies for the assessment of the economics of telecommunication operator investment projects, as described in D1, Volume 2, "Investment analysis framework definition and requirements specification". The EURESCOM Project P901, as described in (D1, Volume 2 and D2, Volume 1 and Volume 2), provides framework and guidelines for high *level executive*

5   *investment analysis modeling for investment, operation, administration, and maintenance cost.*

Claims 1 and 31:

On page 6 of the action, the Examiner acknowledges that Ngi does not disclose
10   limitations (c), (d), (e), and (f) of independent claim 1 of the claimed invention.

Regarding limitation (c) which recites: "determining suppliers' equipment costs for said plurality of network architectures":

15

On page 6 of the action, the Examiner asserts that EURESCOM teaches (c) determining suppliers' equipment costs for said plurality of network architectures (D1, Volume 2: page 49, paragraph 5; page 50, paragraph 5; page 86, paragraph 7).

20   EURESCOM at (D1, Volume 2: page 49, paragraph 5; page 50, paragraph 5; page 86, paragraph 7) discloses high level guidelines and requirements for calculating the cost of a *network architecture*. The methodology and model taught by EURESCOM identify a proprietary tool (that is, the INVAN (INVestment ANalysis of general telecommunication network) tool) as the tool to be used for calculating the cost of the *network architecture*. The INVAN tool is a
25   proprietary tool from previous studies and is not described in the EURESCOM reference.

The Applicant acknowledges that EURESCOM at (D1, Volume 2: page 49, paragraph 5; page 50, paragraph 5; page 86, paragraph 7) teaches the costing of a network architecture.

<u>EURESCOM does not teach limitation (d) engineering the network management processes and the service and customer management processes, based on the received data and options, for managing the plurality of network architecture:</u>

5   On page 6 of the action, the Examiner asserts that EURESCOM teaches (d) engineering the network management processes and the service and customer management processes, based on the data and options of (a), for managing said plurality of network architectures (D2, Volume 1: page 11, Table 1).

10   EURESCOM at (D2, Volume 1: page 11, Table 1) discloses the following table for identification of sources of running costs:

Telecommunication layer	OA&M	Provisioning	Churn	Decommis sioning	Leased facilities
Customer care management	*	*	*		
Service & Service management	*	*	*		*
Network and system management	*	*	*	*	*
Network elements & system elements	*	*	*	*	*
Physical network and infrastructure (cables, ducts, cabinets, buildings)	*	*		*	*

Table 1 Identification of sources of running costs

Table 1 illustrates 5 telecommunication layers of the Telecom Operations Map of the
15   ITU-T TMN model and selected attributes from which the running costs for the methodologies and models in the project are originated. The focus, in these methodologies and models, is on the costs of the selected attributes which consist of OA&M, provisioning, churn, decommissioning, and leased facilities which represent attributes relevant to the network architecture and technology costs to build, own, and grow.

20   EURESCOM at (D2, Volume 1: page 11, Table 1) takes for granted that the operations environment for the Telecommunication Company *already exists* and lists (as shown in Table 1) the TMN functions for customer care management, service & service management, network and system management, network elements & system elements, and physical network and

infrastructure (cables, ducts, cabinets, buildings). There is no mention *or suggestion of engineering the customer care management processes, service & service management processes, network and system management processes for managing* the network architecture and technology.

5   EURESCOM only calculates the costs for the selected attributes identified in Table 1 which are relevant to the 5 telecommunication layers of the Telecom Operations Map of the ITU-T TMN model which include OA&M, provisioning, churn, decommissioning, and leased facilities.

          Further, as previously discussed, on page 9 of the action, the Examiner states that "Ngi

10   does not disclose wherein the instructions (d) comprise instructions for causing the computer to engineer the network management processes and the service and customer management processes for managing the network architecture for the business solution. However, EURESCOM teaches the network management processes and the service and customer management processes for managing the network architecture for the business solution".

15   On page 16 of the action, the Examiner states that "Ngi does not disclose wherein the instructions for engineering the network management processes comprise instructions for causing the computer to engineer at least...... However, EURESCOM teaches network provisioning as a management process (D2, Volume 1: page 11, Table 1; page 12, Table 12).

          And, on page 17 of the action, the Examiner states that "Ngi does not disclose wherein

20   the instructions for engineering the service and customer management processes comprise instructions for causing the computer to engineer at least...... However, EURESCOM teaches identifying customer care management running costs (D2, Volume 1: page 11, Table 1).

          The Examiner clearly states that Ngi does not disclose the engineering (that is, manufacturing, production) of the management processes, however, when it comes to

25   EURESCOM, the Examiner states that EURESCOM teaches (that is, educates, lectures) management processes.

          The Examiner clearly differentiates between Ngi who does not engineer.... And EURESCOM who teaches ...... which leads to the conclusion that EURESCOM also does not disclose the engineering of the management processes. Engineering a management process is not

30   the same as teaching a management process.

Accordingly, the limitation (d) of independent claim 1, which recites "engineering the network management processes and the service and customer management processes, based on the data and options of (a), for managing said plurality of network architectures", **is not found anywhere** in the EURESCOM reference.

5

EURESCOM does not teach limitation (e) determining suppliers' management processes costs for the network management processes and the service and customer management processes:

10   On page 6 of the action, the Examiner asserts that EURESCOM teaches (e) determining suppliers' management processes costs for the network management processes and the service and customer management processes (D2, Volume 1: page 11, Table 1; *identification of sources of running costs:* customer care management, service & service management, network and system management).

15   As previously discussed, EURESCOM at (D2, Volume 1: page 11, Table 1) takes for granted that the operations environment for the Telecommunication Company *already exists* in the form of the 5 telecommunication layers of the Telecom Operations Map of the ITU-T TMN model which includes customer care management, service & service management, network and system management, network elements & system elements, and physical network and infrastructure (cables, ducts, cabinets, buildings). EURESCOM, then, calculates the costs for the

20   selected attributes that are relevant to the 5 telecommunication layers of the Telecom Operations Map of the ITU-T TMN model which consist of OA&M, provisioning, churn, decommissioning, and leased facilities. These *selected attributes are relevant to the costs of the network architecture and technology (e.g., architecture costs to build, own, and grow) and do not cover*

25   *attributes for managing the network architecture and technology. There is no mention or suggestion of costing the customer care management processes, service & service management processes, network and system management processes that replicate the operations environment of* the Telecommunication Company (or Service Provider).

In EURESCOM at (D2, Volume 2: pages 36-42, Sections 3.5-3.7; pages 42-54, Section

30   4) the OA&M costs are divided into maintenance and O&A (operations and administration), wherein the maintenance comprises the cost of repair parts and the cost of repair work as

function of the cost of labor, MTBR (mean time between repairs), and MTTR (mean time to repair). The operation & administration costs are included manually and typically driven by services in terms of the number of customers or the number of critical network elements.

The methodologies and models, taught by EURESCOM, do not provide for costing the management networks which is engineered in limitation (d) of independent claim 1 above for managing the network architecture and technology. The engineering (that is, configuring and provisioning) and costing of new management processes for managing the network architecture and technology may not exist in legacy operations environment for the Telecommunication Company (or Service Provider). For example, the processes for network, service and customer management for TDM (time division multiplexing) network architecture would be different from the processes for network, service and customer management for optical Ethernet including fiber, SONET, RPR or DWDM network architecture. In the later network architecture, new management processes are required for managing the new technology.

Accordingly, EURESCOM at (D2, Volume 1: page 11, Table 1) does not determine the costs of the customer care management processes, service & service management processes, network and system management processes for managing the network architecture and technology. EURESCOM only teaches the cost of selected attributes which are relevant to existing legacy customer care management, service & service management, network and system management.

Furthermore, EURESCOM at (D2, Volume 2: pages 32-33, paragraph 3) states that project P901 **does not** cover all the businesses of a telecommunication company. Therefore, *several cost categories are not considered as a part of running or OA&M costs and are not described in the EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) reference.* The business of managing the network (e.g., network planning and development), managing the services (e.g., service planning and development), and managing the customers (e.g., a trouble ticketing, a service assurance, performance monitoring, and reporting) are excluded from the investment, operation, administration, and maintenance cost modeling and analysis for telecommunication operator strategies.

In the cost model, EURESCOM at (D1, Volume 2: page 5, paragraph 1; page 14, paragraph 3 and D2, Volume 2: page 2, paragraph 1) teaches the cost evolution of network components is described as a function of time and the network architecture cost is described as a

time series of cost evolution and volume of each network element. When *building new network architecture or upgrading an existing one*, an operator has a set of technologies to choose, see EURESCOM at (D2, Volume 2: page 3, paragraph 2).

The network architecture scenario is defined in a shopping list, which indicates how the network is rolled out during the study period. The shopping list defines the amount of equipment and services needed in the network as a function of time. This is similar to Ngi (paragraphs [0007], [0015], [0016], [0018], [0021], [0022], and [0023]) where the network architecture is determined based on equipment list costs as produced by the link budget. Further, EURESCOM at (D2, volume 2: pages 36-42, Sections 3.5-3.7; pages 42-54, Section 4) describes CAPEX and OPEX as time series.

The methodologies and models taught by EURESCOM exclude the engineering of network management processes and service and customer management processes (limitation (d) of independent claim 1 of the claimed invention) as well as the determining of the costs of these processes (limitation (e) of independent claim 1 of the claimed invention). The engineering (that is, manufacturing, production) and costing of network, service, and customer management processes and sub-processes are required for configuring, provisioning, and replicating the management networks for managing the network architecture and technology.

Accordingly, the limitation (e) of independent claim 1, which recites "determining suppliers' management processes costs for the network management processes and the service and customer management processes", **is not found anywhere** in the EURESCOM reference.

EURESCOM does not teach limitation (f) validating and calibrating the data and options and the costs for the plurality of network architectures, the network management processes, and the service and customer management processes:

On page 6 of the action, the Examiner asserts that EURESCOM teaches (f) validating and calibrating the data and options and the costs for the plurality of network architectures, the network management processes, and the service and customer management processes (D1, Volume 2: page 28, paragraph 1; page 5, paragraph 1; D2, Volume 2: pages 30-31, Section 3.2.2; pages 34-35, Section 3.4).

The Applicant presents below the contents of the texts cited in EURESCOM at (D1, Volume 2: page 28, paragraph 1; page 5, paragraph 1; D2, Volume 2: pages 30-31, Section 3.2.2; pages 34-35, Section 3.4).

EURESCOM at (**D1, Volume 2: page 28, paragraph 1**) discloses:
"EURESCOM P919 "Evaluation of Integrated Fixed and Mobile Networks" is a relevant collaboration project for the assessments in Task 4 of P901 dealing with Fixed-Mobile Convergence. The main objectives of P919 which are of relevance to P901are:

- Identify converged services (not already covered by P809)

- Identify the infrastructure requirements for converged services

- Identify the commonalties of various fixed and mobile networks

- Propose potential architectures and topologies for integrated networks

- Devise a framework to assess each architecture and topology in terms of desirability from the network operator perspective

- Identify the <u>preferred architecture(s) and topologies</u> from the network operator perspective

- Propose an evolution path towards the identified architectures and topologies".

There is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise in the cited text of EURESCOM at (**D1, Volume 2: page 28, paragraph 1**).

EURESCOM at (**D1, Volume 2: page 5, paragraph 1**) discloses:
"In the following, we will use the term "module" for a group of <u>generic models that cover a specific area for example cost methodologies</u>. At this stage <u>we will not discuss the granularity of these models, nor the ways of implementation (Excel, high level language etc.); this work will be performed later on in the project</u>. <u>As an example, the costing module contains all the costing models are gathered in a well-structured way</u>. As can be seen in Figure 5, each module will most often have inputs and outputs. The inputs to the cost, market, and risk models are defined by the scenarios. Even though the investment projects under study and their respective scenarios may be very significant, the following model elements must be presented in a general way:
- Services. Penetration, number of customers and tariffs are presented **as time series**.

- Network architecture. Cost evolution and volume of each network element (**time series**)

- Market segments. Number of customers in each market segment as a function of time (for each service). A moderate number of segments is recommended.

- Usage of services. For each market segment, the usage for each service is most often modeled as busy hour traffic in Mb per day/month (data) or minutes per day/month (voice)

- Area types. Different areas are described by the same attributes: Customer density, customer mix, average loop lengths, duct availability, surface conditions (necessary for civil works cost estimates) and housing (single house dwellings or apartments)."

There is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise in the cited text of EURESCOM at (**D1, Volume 2: page 5, paragraph 1**).

EURESCOM at (**D2, Volume 2: pages 30-31, Section 3.2.2**) discloses framework for determining leased facilities costs and specified the parameters that may be used in determining the leased facilities costs.

There is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise in the cited text of EURESCOM at (**D2, Volume 2: pages 30-31, Section 3.2.2**).

Moreover, EURESCOM at (**D2, Volume 2: pages 34-35, Section 3.4**) discloses cost factors or drivers for the OA&M cost. Section 3.4 presents few examples of OA&M processes, the cost factors, and the driving parameters. As stated, it does not include an exhaustive description of all processes, factors and parameters. The intention is to provide a common framework for cost modeling. In tables 2, 3, and 4 cost factors and driving parameters of a few operational, administrative, and maintenance processes are presented, respectively.

Again, there is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise in the cited text of EURESCOM at (**D2, Volume 2: pages 34-35, Section 3.4**).

A careful reading of EURESCOM at (D1, Volume 2: page 28, paragraph 1; page 5, paragraph 1; D2, Volume 2: pages 30-31, Section 3.2.2; pages 34-35, Section 3.4) will confirm

that there is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise in the cited sections of the EURESCOM reference.

Moreover, the Applicant searches EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) using key words such as "validate", "calibrate", and the search result is "0" or "not found".

Accordingly, the limitation (f) of independent claim 1, which recites "validating and calibrating the data and options and the costs for said plurality of network architectures, the network management processes, and the service and customer management processes", **is not found anywhere** in the EURESCOM reference.

In summary, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) does not disclose limitations (d), (e), and (f) of independent claim 1 of the claimed invention.

Since Ngi does not disclose limitations (c), (d), (e), and (f) of independent claim 1 and EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) does not disclose limitations (d), (e), and (f) of independent claim 1. The combination of Ngi and EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) does not disclose the limitations (d), (e), and (f) of independent claim 1 of the claimed invention.

Further, neither Ngi nor EURESCOM references separately or in combination teach or suggest the limitations (d), (e), and (f) of independent claim 1 of the claimed invention. Moreover, neither Ngi nor EURESCOM references expressly or implicitly suggest the limitations (d), (e), and (f) of independent claim 1. The combination of Ngi and EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2) references **does not** produce the claimed invention, as claimed in independent claims 1 and 31 of the present application.

It is clear that there is no motivation to combine the teachings of Ngi with EURESCOM and the combined teachings of Ngi and EURESCOM references **do not** teach the limitations of independent claim 1, which recite: "(d) engineering the network management processes and the service and customer management processes for managing the plurality of network architectures; (e) determining suppliers' management processes costs for the network management processes and the service and customer management processes; and (f) validating and calibrating the data

and options and the costs for said plurality of network architectures, the network management

processes, and the service and customer management processes", as in the claimed invention.

To establish a *prima facie* case of obviousness of a claimed invention, the prior art

reference (or references when combined) must teach or suggest <u>all</u> the claim limitations. The

teaching or suggestion to make the claimed combination and the reasonable expectation of

success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*,

947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) - MPEP §706.02(j).

In view of the utter failure of Ngi to describe the numerous elements in Applicant's

independent claims 1 and 31 discussed above, and the failure of the EURESCOM reference to

cure the deficiencies in the Ngi reference, the subject matter of independent claims 1 and 31

cannot be obvious.

Claims 2-10, 32-36, and 38:

Claims 2-10 are all directly or ultimately dependent from independent claim 1; and

Claims 32-36 and 38 are all directly or ultimately dependent from independent claim

31.

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending

therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir 1988) – MPEP

2143.03.

Since independent claims 1 and 31 are nonobvious over Ngi in view of EURESCOM

for the reasons set forth above, dependent claims 2-10, 32-36, and 38 are likewise nonobvious.

Claims 11-14:

Regarding section 9 of the action, claims 11-14 have been rejected under 35 U.S.C.

103(a) as being unpatentable over Ngi in view of EURESCOM (D1, Volume 2 and D2, Volume

1 and Volume 2), and further in view of Arbel.

The combined teachings of Ngi, EURESCOM (D1 Volume 2 and D2 Volume 1 and Volume 2) and Arbel references **do not** produce the elements in claims 11-14 of the claimed invention as will be described below.

5   On page 12 of the action, the Examiner acknowledges that neither Ngi nor EURESCOM disclose costs relating to footprints.

Arbel at ([0025] and [0074]) has been cited for allegedly disclosing costs relating to footprints. The focus of Arbel teaching is on the internal node architecture and it is well known in the art that node characteristics or attributes comprise cost, footprint, and power consumption
10   of the node.

Claims 11-14, which are all directly or ultimately dependent from independent claim 1, recite "… a footprint …. cost…"

Since independent claim 1 is nonobvious under 35 U.S.C. 103 over Ngi in view of
15   EURESCOM for the reasons set forth above, and claims 11-14, which are dependent from independent claim1, are likewise nonobvious, and since Arbel does not cure the numerous deficiencies of Ngi and EURESCOM, claims 11-14 rejection should be reversed.

In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir 1988) – MPEP 2143.03.

20

Claims 15-19, 21-26, and 37:

Regarding section 10 of the action, claims 15-19, 21-26, and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Ngi in view of EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), and further in view of Mobile.

25

The combined teachings of Ngi, EURESCOM (D1 Volume 2 and D2 Volume 1 and Volume 2) and Mobile references **do not** produce the elements in claims 15-19, 21-26, and 37 of the claimed invention as will be described below.

30   On page 15 of the action, the Examiner acknowledges that Ngi does not disclose limitation (e) of independent claim 1 of the claimed invention. The Examiner also

acknowledges, on page 6 of the action, that Ngi does not disclose limitations (c), (d), (e), and (f) of independent claim 1 of the claimed invention.

On page 15 of the action, the Examiner states: "EURESCOM teaches identification of the sources of running costs such as customer care management, service & service management,

5   network and system management. ..... EURESCOM further characterizes these costs as related to maintenance processes, operational processes ... EURESCOM further discloses "costing the network elements" (D2, Volume 2: page 68)"

The Applicant acknowledges that EURESCOM calculate the costs of network elements and the management costs of selected attributes which are relevant to the network elements and

10   network architecture including costs to build, own and grow, as is the case in Ngi's reference.

As previously discussed, EURESCOM at (D2, Volume 1: page 11, Table 1) takes for granted that the operations environment for the Telecommunication Company *already exists* including customer care management, service & service management, network and system management.... EURESCOM, then, calculates costs of selected attributes which are relevant to

15   the network architecture and technology.

EURESCOM does not teach engineering (that is, configuring and provisioning) of these processes for managing the network architecture and technology for the Telecommunication Company (or Service Provider). EURESCOM does not engineer customer care management processes, service & service management processes, network and system management

20   processes..., as is the case in the present application (Figures 8 – Figures 14; and paragraphs [0101]-[0132] of the present application).

The Examiner states, on page 16 of the action, that Mobile teaches cost categories which include network ....."

25   The Applicant acknowledges that Mobile teaches various costs that are related to existing network management center, network elements and equipment, and technology (slides 29, 258, 263, and 264 of Mobile). Mobile (as is the case in EURESCOM) *does not* teach the engineering (that is, manufacturing, production) of the management processes in the network management center for managing the network elements and equipment in the network

30   architecture and technology.

Furthermore, determining the costs of various categories does not imply the engineering of the management networks or processes. The engineering of the network management processes and service and customer management processes (limitation (d) of independent claim 1) is not the result of costing of various categories in the network management center, network

5   elements and equipment, and technology, as previously discussed.

Moreover, the engineering of the management processes and sub-processes purport configuration, re-production, replicating, and provisioning of the tasks within each process. The determining the costs of these processes (which are engineered for managing the network architecture) imply determining the costs of the engineered management processes and sub-

10   processes.

As previously discussed, the focus of the office action dated 04/29/2010 (as well as previous office actions) is on determining cost categories which are cited in Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), Arbel, and Mobile references. None of these cited references disclose concepts, methodologies, modeling or engineering of the management

15   networks (that is, the operations environment which includes the network management processes and the service and customer management processes) for the Service Providers. The Ngi, EURESCOM (D1, Volume 2 and D2, Volume 1 and Volume 2), Arbel, and Mobile references take for granted that the network management center (slide 29 of Mobile) or the management functions (EURESCOM at (D2, Volume 1: page 11, Table 1)) for the Telecommunications

20   Company or Service Provider is *already exists.*

Determining the costs in various cost categories and adding these costs to the network architecture costs does not purport the engineering of the management networks for managing the network architecture and technology. Determining the cost of an element or network architecture is a measured value which is used in a comparative analysis and *does not* provide a

25   management network structure or configuration for the operations environment for the Service Provider.

Accordingly, the combination of Ngi, EURESCOM (D1 Volume 2 and D2 Volume 1 and Volume 2) and Mobile references **do not** teach limitations (d) and (e) of independent claim 1 of the claimed invention.

30

Furthermore, regarding limitation (f) of independent claim 1, the Applicant searches Ngi, Mobile (all of the 291 slides), and EURESCOM (D1 Volume 2 and D2 Volume 1 and Volume 2) references using key words such as "validate", "calibrate", and the search result in each reference is "0" or "not found".

5   A careful reading of Ngi, EURESCOM, and Mobile references will confirm that there is no mention or suggestion of any methodologies, models, framework, guidelines, or requirements for validating and calibrating data, options, and costs for an element, a process, a network architecture or otherwise.

Accordingly, the limitation of independent claim 1, which recites "(f) validating and

10   calibrating the data and options and the costs for said plurality of network architectures, the network management processes, and the service and customer management processes", **is not found anywhere** in the Ngi, EURESCOM and Mobile references.

Since independent claim 1 is nonobvious under 35 U.S.C. 103 over Ngi in view of

15   EURESCOM for the reasons set forth above, and claims 15-19 and 21-26, which are dependent from independent claim1, are likewise nonobvious, and since Mobile does not cure the numerous deficiencies of Ngi and EURESCOM, claims 15-19 and 21-26 rejection should be reversed. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir 1988) – MPEP 2143.03.

20   Dependent claims 21-26 have been amended to add an existing key feature of the present invention.

Moreover, since independent claim 31 is nonobvious under 35 U.S.C. 103 over Ngi in view of EURESCOM for the reasons set forth above, and claim 37 which is dependent from

25   independent claim 31, is likewise nonobvious, and since Mobile does not cure the numerous deficiencies of Ngi and EURESCOM, claim 37 rejection should be reversed. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir 1988) – MPEP 2143.03.

Appendix B
A clean copy of the claims dated 15 January 2010

In the claims

5   1.   (previously presented)   A computer program product comprising a computer-readable
          medium having stored thereon instructions for causing a computer to perform a process for
          assessing business solutions comprising alternative network architectures and management
          processes for a telecommunications network, the computer program product comprising
          instructions for:

10   (a)   receiving data and options for plurality of network architectures, network
                management processes, and service and customer management processes;

          (b)   engineering the plurality of network architectures based on the data and options of
                (a);

          (c)   determining suppliers' equipment costs for said plurality of network architectures;

15   (d)   engineering the network management processes and the service and customer
                management processes, based on the data and options of (a), for managing said
                plurality of network architectures;

          (e)   determining suppliers' management processes costs for the network management
                processes and the service and customer management processes;

20   (f)   validating and calibrating the data and options and the costs for the plurality of
                network architectures, the network management processes, and the service and
                customer management processes;

          (g)   determining, based on the costs of the plurality of network architectures and the
                network management processes and the service and customer management processes,

25   business parameters for the business solutions; and

          (h)   storing and displaying the business parameters for the business solutions for the
                telecommunications network.

     2.   (previously presented)   The computer program product as described in claim 1, wherein
          the instructions (a) comprise instructions for causing the computer to receive traffic data;

30   customer data; and financial and labor data.

3.   (previously presented)   The computer program product as described in claim 2, wherein the instructions (a) further comprise instructions for causing the computer to:

-   receive technology options which comprise at least one of: time division multiplexing (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP),

5   virtual private network (VPN), multi protocol label switching (MPLS), and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM) for a network architecture for a business solution;

-   receive options for the network management processes which comprise at least one of:

10   inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs for managing the network architecture for the business solution; and

-   receive options for the service and customer management processes which comprise at least one of: customer relationship management (CRM), work order management

15   (WOM), network inventory management (NIM), service activation and provisioning (SAP), fault management (FM), performance management (PM), accounting and billing, and security management for managing the network architecture for the business solution.

4.   (previously presented)   The computer program product as described in claim 1, wherein

20   the instructions (g) comprise instructions for causing the computer to:

-   compute the business parameters for the business solutions over a pre-determined study period; and

-   determine business parameters which comprise at least one of: capital expenditure (CAPEX), wherein the CAPEX comprises a network architecture cost, taxes, interests,

25   and depreciation and amortization (D/A) expenses; operational expenditure (OPEX), wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A); revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); the OPEX as percentage of the revenue; and total

30   expenditure as percentage of the revenue, wherein the total expenditure comprises the CAPEX and the OPEX.

5.   (previously presented)   The computer program product as described in claim 3, wherein the instructions (b) comprise instructions for causing the computer to engineer the network architecture for the business solution.

6.   (previously presented)   The computer program product as described in claim 3, wherein the instructions (d) comprise instructions for causing the computer to engineer the network management processes and the service and customer management processes for managing the network architecture for the business solution.

7.   (previously presented)   The computer program product as described in claim 4, wherein the instructions (h) comprise instructions for causing the computer to display the business parameters in tables and graphical charts for the business solutions over the pre-determined study period.

8.   (previously presented)   The computer program product as described in claim 5, wherein the instructions (c) comprise instructions for causing the computer to determine a network architecture cost and a leasing cost for the network architecture for the business solution.

9.   (previously presented)   The computer program product as described in claim 8, wherein the instructions (f) comprise instructions for causing the computer to validate and calibrate the data and options; the network architecture cost; and the leasing cost for said network architecture for the business solution.

10.   (previously presented)   The computer program product as described in claim 8, wherein the instructions (b) further comprise instructions for causing the computer to determine an owned network elements (NEs) count; a leased NEs count; an owned customer premise equipment (CPE) count; a leased CPE count; an owned links count; a leased links count; and a leased ports count for said network architecture; and wherein said network architecture has NEs, CPE, and links from the same or different equipment suppliers.

11.   (previously presented)   The computer program product as described in claim 10, wherein the instructions (c) further comprise instructions for causing the computer to determine a price per network element (NE), a footprint per NE cost, a power consumption per NE cost; a price per CPE, a footprint per CPE cost, and a power consumption per CPE cost; and a price per link and a link transmission rate.

12.   (previously presented)   The computer program product as described in claim 11, wherein the instructions for determining the network architecture cost comprise instructions for

causing the computer to compute a total owned NEs cost; a total owned CPE cost; and a total owned links cost for said network architecture for the business solution; and wherein the instructions for determining the leasing cost comprise instructions for causing the computer to compute a total footprints cost and a total power consumptions cost for said

5   owned NEs and CPE.

13. (previously presented) The computer program product as described in claim 10, wherein the instructions (c) further comprise instructions for causing the computer to determine a leased per NE cost, a footprint per NE cost, and a power consumption per NE cost; a leased per CPE cost, a footprint per CPE cost, and a power consumption per CPE cost; a

10   leased per link cost; a leased link per unit length cost, a unit length per link count, and a link transmission rate; and a leased per port cost.

14. (previously presented) The computer program product as described in claim 13, wherein the instructions for determining the leasing cost comprise instructions for causing the computer to compute a total leased NEs cost; a total leased CPE cost; a total footprints cost

15   and a total power consumptions cost for said leased NEs and CPE; a total leased links cost; a total leased links per unit length cost; and a total leased ports cost for said network architecture for the business solution.

15. (previously presented) The computer program product as described in claim 6, wherein the instructions (e) comprise instructions for causing the computer to:

20   - determine a network management processes cost, wherein the network management processes cost comprises costs for inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs for each network element in the network architecture for the business solution;

25   - determine a service and customer management processes cost, wherein the service and customer management processes cost comprises costs for customer relationship management (CRM), work order management (WOM), network inventory management (NIM), service activation and provisioning (SAP), fault management (FM), performance management (PM), accounting and billing, and security

30   management for each link in the network architecture for the business solution; and

- determine a management processes cost which comprises the network management processes cost and the service and customer management processes cost.

16. (previously presented) The computer program product as described in claim 15, wherein the instructions for engineering the network management processes comprise instructions for causing the computer to engineer at least one of the following processes: inside plant maintenance; outside plant maintenance; network engineering; network provisioning; installation; testing; and repairs.

17. (previously presented) The computer program product as described in claim 16, further comprises instructions for causing the computer to determine the network management processes cost for said network management processes for at least one of: a manual operations mode; a mechanized operations mode; and a manual and mechanized operations mode.

18. (previously presented) The computer program product as described in claim 15, wherein the instructions for engineering the service and customer management processes comprise instructions for causing the computer to engineer at least one of the following processes: customer relationship management (CRM); work order management (WOM); network inventory management (NIM); service activation and provisioning (SAP); fault management (FM); performance management (PM); accounting and billing; and security management.

19. (previously presented) The computer program product as described in claim 18, further comprises instructions for causing the computer to determine costs of the customer relationship management (CRM); the work order management (WOM); the network inventory management (NIM); the service activation and provisioning (SAP); the fault management (FM); the performance management (PM); the accounting and billing; and the security management for at least one of: a manual operations mode; a mechanized operations mode; and a manual and mechanized operations mode.

20. (canceled)

21. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the customer relationship management (CRM) comprise instructions for causing the computer to determine costs for at least one of: a work order entry and validation process; a service delivery and work order processing

process; a customer care process; a trouble ticketing process; and a service assurance and performance reporting process.

22. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the work order management (WOM) comprise instructions for causing the computer to determine costs for at least one of: a work order processing process; a client management process; a report management process; and an administration management process.

23. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the network inventory management (NIM) comprise instructions for causing the computer to determine costs for at least one of: a customer, services, and resources association management process; an equipment management process; and a network management process.

24. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the service activation and provisioning (SAP) comprise instructions for causing the computer to determine costs for at least one of: a create a new service process; a customer association process; a process for aligning and synchronizing with billing, maintenance, and performance; and a resource discovery and database quires process.

25. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the fault management (FM) comprise instructions for causing the computer to determine costs for at least one of: a trouble ticketing process; an isolate problem process; and an analysis and resolution for service logic agreement (SLA) process.

26. (previously presented) The computer program product as described in claim 19, wherein the instructions for determining the cost of the performance management (PM) comprise instructions for causing the computer to determine costs for at least one of: a collect performance data process; a generate performance reports process; and a validate service logic agreement (SLA) process.

27. (canceled)

28. (canceled)

29. (canceled)

30.   (canceled)

31.   (previously presented)   A method for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network, the method comprising the steps of instructing a computer to:

5   (n)   receive data and options for plurality of network architectures, network management processes, and service and customer management processes;

        (m)   engineer the plurality of network architectures based on the data and options of (n);

        (u)   determine suppliers' equipment costs for said plurality of network architectures;

        (v)   engineer the network management processes and the service and customer management processes, based on the data and options of (n), for managing said plurality of network architectures;

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        (w)   determine suppliers' management processes costs for the network management processes and the service and customer management processes;

        (x)   determine, based on the costs of the plurality of network architectures and the network management processes and the service and customer management processes, business parameters for the business solutions;

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        (y)   validate and calibrate the data and options and the costs for the plurality of network architectures and the network management processes and the service and customer management processes; and

20   (z)   store and display the business parameters for the business solutions for the telecommunications network.

32.   (previously presented)   The method as described in claim 31, wherein the step (x) comprises steps of instructing the computer to:

        -   compute the business parameters for the business solutions over a pre-determined study period; and

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        -   determine at least one of the business parameters which comprise: capital expenditure (CAPEX), wherein the CAPEX comprises a network architecture cost, taxes, interests, and depreciation and amortization (D/A) expenses; operational expenditure (OPEX), wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A); revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings

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before interest and taxes (EBIT); the OPEX as percentage of the revenue; and total
expenditure as percentage of the revenue, wherein the total expenditure comprises the
CAPEX and the OPEX.

33.   (previously presented)   The method as described in claim 31, wherein the step (n)
comprises steps of instructing the computer to:
-   receive traffic data, customer data, and labor and financial data;
-   receive technology options which comprise at least one of: time division multiplexing
    (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP),
    virtual private network (VPN), multi protocol label switching (MPLS), and optical
    Ethernet including fiber, synchronous optical network (SONET), resilience packet ring
    (RPR), and dense wavelength division multiplexing (DWDM) for a network
    architecture for a business solution;
-   receive options for the network management processes which comprise at least one of:
    inside plant maintenance, outside plant maintenance, network engineering, network
    provisioning, installation, testing, and repairs for managing the network architecture for
    the business solution; and
-   receive options for the service and customer management processes which comprise at
    least one of: customer relationship management (CRM), work order management
    (WOM), network inventory management (NIM), service activation and provisioning
    (SAP), fault management (FM), performance management (PM), accounting and
    billing, and security management for managing the network architecture for the
    business solution.

34.   (previously presented)   The method as described in claim 33, wherein the step (u)
comprises steps of instructing the computer to determine a network architecture cost and a
leasing cost for the network architecture for the business solution.

35.   (previously presented)   The method as described in claim 34, wherein the step (m)
comprises steps of instructing the computer to engineer the network architecture for the
business solution.

36.   (previously presented)   The method as described in claim 33, wherein the step (v)
comprises steps of instructing the computer to:

- engineer network management processes which comprise engineering at least one of the following processes: inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs; and

- engineer the service and customer management processes which comprise engineering at least one of the following processes: customer relationship management (CRM), work order management (WOM), network inventory management (NIM), service activation and provisioning (SAP), fault management (FM), performance management (PM), accounting and billing, and security management.

37.   (previously presented)   The method as described in claim 36, wherein the step (w) comprises steps of instructing the computer to:

- determine a network management processes cost for the network management processes, which comprises determining costs of inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs for each network element in the network architecture for the business solution for at least one of: a manual operations mode, a mechanized operations mode, and a manual and mechanized operations mode;

- determine a service and customer management processes cost for the service and customer management processes, which comprises determining costs of customer relationship management (CRM), work order management (WOM), network inventory management (NIM), service activation and provisioning (SAP), fault management (FM), performance management (PM), accounting and billing, and security management for each link in the network architecture for the business solution for at least one of: a manual operations mode, a mechanized operations mode, and a manual and mechanized operations mode; and

- determine a management processes cost which comprises the network management processes cost and the service and customer management processes cost.

38.   (previously presented)   The method as described in claim 32, wherein the step (z) comprises steps of instructing the computer to tabulate and graphically chart the business parameters for said business solutions over said pre-determined study period.

39.   (canceled)

Appendix C

A copy of the original specification of 24 September 2003(Pub: US 2005/0065805)

[0010]   The business parameters comprise the total expenditure; and wherein the total

5   expenditure comprises capital expenditure (CAPEX) and operational expenditure (OPEX).

The CAPEX comprises a network architecture cost; taxes; interests; and

deprecation and amortization (D/A) expenses. The OPEX comprises a management

processes cost; a leasing cost; and sales, general and administration (SG&A) expenses.

10   [0011]   The business parameters further comprise revenue; capacity; return on investment

(ROI); earnings before interest, taxes, and deprecation and amortization (EBITDA);

earnings before interest and taxes (EBIT); OPEX as percentage of revenue; and total

expenditure as percentage of revenue.

15   [0021]   The means for engineering service and customer management processes comprises

a means for selecting one or more of the following processes: customer relationship

management (CRM); work order management (WOM); network inventory management

(NAI); service activation and provisioning (SAP); fault management (FM); performance

management (PM); accounting and billing; and security management.

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[0025]   The program means for causing the computer to receive the data for the plurality of

network architectures comprises means for causing the computer to receive input user data;

network architectures data; and management processes data for said network architectures.

The input user data comprises traffic data; customer data; and financial and labour data for

25   the plurality of network architectures. The network architectures data comprises network

elements (NEs) data; CPE data; links and ports data; and further comprises network

architectures options for said network architectures. The management processes data

comprises network management data; service and customer management data; and further

comprises network management options; and service and customer management options

30   for managing each of said network architectures.

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[0061]   The input user data 110 module enables an analyst to input user data and options for a plurality of network architectures to be modeled. The input user data comprises traffic data; customer data; and financial and labour data. The options enable the analyst to select technology alternatives for network architectures and management processes for managing said network architectures.

[0067]   The business parameters comprise total expenditure, wherein the total expenditure comprises capital expenditure (CAPEX) and operational expenditure (OPEX). The CAPEX comprises a network architecture cost, taxes, interests, and deprecation and amortization (D/A) expenses; and the OPEX comprises a management processes cost; a leasing cost; and sales, general and administration (SG&A) expenses.

[0068]   The business parameters further comprise financial and business statistics comprising revenue; capacity; return on investment (ROI); earnings before interest, taxes, and deprecation and amortization (EBrIDA); earnings before interest and taxes (EBIT); OPEX as percentage of revenue; and total expenditure as percentage of revenue.

[0087]   The ARCH1 520 having switching nodes 521 and services nodes 522 from supplier A 501; add/drop nodes 524 and cross-connect nodes 524 from supplier B 502; and other nodes 525 from supplier C 503. The ARCH2 530 having switching nodes 531 and services nodes 532 from supplier A 504; add/drop nodes 534 and cross-connect nodes 534 from supplier B 505; and other nodes 535 from supplier C 506. The ARCH3 540 having switching nodes 541 and services nodes 542 from supplier A 507; add/drop nodes 544 and cross-connect nodes 544 from supplier B 508; and other nodes 545 from supplier C 509.

[0094]   A total footprints cost 675 is determined by multiplying the sum of the owned CPE count 650 and the leased CPE count by the footprint per CPE cost 670. A total owned CPE cost 660 is determined by multiplying the owned CPE count 650 by the price per CPE 655. A total leased CPE cost 680 is determined by multiplying the leased CPE count 663 by the leased per CPE cost 665. A total power consumptions cost 690 is determined by

multiplying the sum of the owned CPE count 650 and the leased CPE count 663 by the power consumption per CPE cost 685.

[0097]   The ARCH1 720 having T1 721 and T3 722 links from supplier A 701; E1 723 and E3 724 links from supplier B 702; and DSL links 725, 10/100 BT 726, and 100/1000 BT 727 links from supplier C 703. The ARCH2 730 having fiber 100FX 731 from supplier A 704; OC3 732, OC12 733, OC48 734, and OC 192 links from supplier B 705; and DWDM ring 736, RPR ring 737, and 1000SX/1000LX 738 from supplier C 706. The ARCH3 740 having SONET ring 741 and microwave 742 links from supplier A 707; fiber 100 FX 743 and 100/1000 BT 744 links from supplier B 708; and DSL 745 and T3 746 links from supplier C 709.

[0151]   Procedure 1700 adjusts and updates data (block 1780) as required and re-analyzes the business parameters (block 1740). When analysis is completed for the pre-determined study period, procedure 1700 reports the business parameters for said network architectures over the pre-determined study period. The reporting of said business parameters comprises tabulating and graphically charting the business parameters for each of the network architectures over said pre-determined study period, thus, finishing the procedure 1700 (block 1795).

[0168]   FIG. 21 shows an illustrative graphical output from an execution of the OMCS tool of FIG. 1. The graph 2100 plots dollars per Mbps 2010 over five years study period 2120, year0, year1, year2, year3, and year4 for five network architectures ARCH1 2130, ARCH2 2135, ARCH3 2140, ARCH4 2145, and ARCH5 2150. The five architectures represent the five different technologies described in FIG. 18 above. In graph 2100 it can be seen that the return on investment for ARCH5 2050 is higher than the other architectures.